

Flood losses during September 1938 ¹

Atlantic Slope drainage:	
Hudson River.....	\$5, 220, 000
Upper Susquehanna River.....	150, 725
Neuse River.....	4, 500
Missouri Basin:	
Small streams in Colorado.....	679, 735
Fall River in South Dakota.....	25, 000
Arkansas Basin: North Canadian River.....	49, 350
West Gulf of Mexico drainage:	
Small streams in eastern New Mexico.....	116, 500
Lower Rio Grande.....	8, 175
Gulf of California drainage:	
Gila River.....	905
Verde River.....	550
Colorado River in Arizona.....	200

Total..... 6, 255, 640

¹ Estimates on damages in Connecticut and Merrimack and upper Mississippi Basins are not available.

² Includes damages also from wind and heavy rain.

Table of flood stages during September 1938

[All dates in September unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
	<i>Feet</i>			<i>Feet</i>	
Pemigewasset: Plymouth, N. H.....	11	20	23	23.6	21
Contoocook: Penocook, N. H.....	6	21	25	13.5	23
Nashua: East Pepperell, Mass.....	8			14.1	23
Merrimack:					
Franklin, N. H.....	14	20	24	28.5	22
Manchester, N. H.....	7	21	25	13.7	23
Lowell, Mass.....	55	21	24	63.0	23
Lawrence, Mass.....	25	21	24	31.4	23
White: West Hartford, Vt.....	18	22	22	19.4	22
Connecticut:					
South Newbury, N. H.....	22	21	24	27.9	22
White River Junction, Vt.....	18	21	24	26.6	22
Walpole, N. H.....	30	21	23	39.1	22
Montague City, Mass.....	28	21	25	44.6	22
Holyoke, Mass.....	9	21	25	14.9	22
Springfield, Mass.....	20	21	24	25.8	22-23
Hartford, Conn.....	16	21	28	35.4	23
Mohawk: Tribes Hill, N. Y.....	23	22	22	23.5	22
Hudson: Albany, N. Y.....	11	21	23	16.5	22
Lackawaxen: Hawley, Pa.....	6	21	22	(¹)	21
Tioughnioga: Whitney Point, N. Y.....	12	21	24	13.3	22
Chenango:					
Sherburne, N. Y.....	8	22	22	8.4	22
Greene, N. Y.....	8	22	22	9.0	22

¹ Crest not obtained, gage read 8.8 at 8 a. m. of 22d.

² Flood stages continued into October.

Table of flood stages during September 1938—Continued

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE—continued					
	Feet			Feet	
Susquehanna:					
Oneonta, N. Y.....	12	21	25	21.3	22
Bainbridge, N. Y.....	12	21	24	16.7	22
Little: Kenly, N. C.....	8	19	22	15.4	21
Neuse:					
Goldsboro, N. C.....	14	22	25	18.0	24
Kinston, N. C.....	14	25	27	15.3	26
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Chippewa: Durand, Wis.....	11	11	13	15.2	11
Black: Galesville, Wis.....	10	10	15	13.7	12
Wisconsin:					
Knowlton, Wis.....	12	{ Aug. 31	1	14.3	1
		9	12	19.9	11
Wisconsin Rapids, Wis.....	12	11	12	13.4	11-12
Wisconsin Dells, Wis.....	16	13	16	18.8	14
Portage, Wis.....	17	12	18	20.5	14
Rock: Moline Bridge, Ill.....	10	9	Oct. 5	11.9	{ 18, 20, 22-26
Des Moines:					
Boone, Iowa.....	20	16	20	23.1	18
Tracy, Iowa.....	14	21	24	15.0	23-24
Ottumwa, Iowa.....	9	25	25	9.0	25
Mississippi:					
La Crosse, Wis.....	12	13	16	12.3	15
Prairie du Chien, Wis.....	18	17	20	18.4	18
Dubuque, Iowa.....	18	17	24	20.5	20
Clinton, Iowa.....	16	19	28	18.3	22, 23
Le Claire, Iowa.....	10	19	28	11.6	23
Davenport, Iowa.....	15	21	27	15.8	24
Muscatine, Iowa.....	15	19	Oct. 1	18.5	24
Keithsburg, Ill.....	12	20	30	14.3	25
Keokuk, Iowa.....	12	21	(²)	16.4	26
Quincy, Ill.....	14	21	(²)	18.3	27
Hannibal, Mo.....	13	20	(²)	18.1	27
Louisiana, Mo.....	12	21	(²)	16.3	28
Missouri Basin					
Big Sioux: Akron, Iowa.....	12	14	19	16.3	17
Arkansas Basin					
North Canadian:					
Woodward, Okla.....	5	6	7	5.3	7
Canton, Okla.....	6	7	9	9.1	8
Yukon, Okla.....	8	7	16	12.3	9
WEST GULF OF MEXICO DRAINAGE					
Rio Grande:					
Rio Grande City, Tex.....	21	Aug. 29	1	30.1	Aug. 31
Hidalgo, Tex.....	21	Aug. 30	3	24.7	2
Mercedes, Tex.....	21	Aug. 31	4	22.4	3
		2	5	18.4	4
Brownsville, Tex.....	18	{ 29	Oct. 3	18.6	Oct. 1

WEATHER ON THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, I. R. TANNEHILL in charge]

NORTH ATLANTIC OCEAN, SEPTEMBER 1938

By H. C. HUNTER

Atmospheric pressure.—During most of the month the Azores HIGH was stronger than normal, but it was weak during the period from the 19th to 26th. It is worth noting that this was the time of special intensity of the Icelandic low; also the time when there occurred nearly all the particularly violent winds that were met over the eastern North Atlantic.

For the month as a whole, the southeastern North Atlantic had pressure averaging moderately above normal. Also in the region to the northeastward, including most of the vicinity of the British Isles, there was a slight excess; while to the northwestward and westward, the Grand Banks-St. Lawrence Gulf region likewise averaged a little

above normal. Deficiencies appeared along the eastern coast of the United States and thence southward to the Bahamas and Puerto Rico, while the Greenland-Iceland area had a considerable deficiency.

The extreme pressure readings of the month found in vessel reports at hand are 30.68 and 27.85 inches. The former reading was reported by radio from an unidentified vessel near 46° north, 22° west, late on the forenoon of the 11th. The latter reading was radioed by the British steamship *Corrales*, in the month's hurricane, near 23° 23' N., 67° 05' W., about 7 p. m. of the 18th. Apart from data for the western Atlantic connected with the hurricane, the lowest reading found is 28.43 inches, near 51° N., 18° W., at a late hour of the 22d, noted by the American steamship *Collamer*.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, September, 1938

Station	Average pressure	Departure	High-est	Date	Low-est	Data
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Julianehaab, Greenland.....	29.64	-0.12	30.02	14	29.08	23
Reykjavik, Iceland.....	29.65	-0.07	30.09	7	29.12	19
Lerwick, Shetland Islands.....	29.90	+0.06	30.33	9	29.47	12
Valencia, Ireland.....	29.99	.00	30.39	{ 9, 10 11, 12 }	29.21	22
Lisbon, Portugal.....	30.07	+0.05	30.21	18	29.92	25
Madeira.....	30.08	+0.06	30.21	18, 19	29.89	21
Horta, Azores.....	30.24	+0.07	30.46	29	29.86	22
Belle Isle, Newfoundland.....	29.95	+0.06	30.38	18	29.42	24
Halifax, Nova Scotia.....	30.05	.00	30.32	18	29.70	24
Nantucket.....	30.02	-0.06	30.34	10	29.39	21
Hatteras.....	30.00	-0.06	30.26	26	29.26	21
Bermuda.....	30.08	.00	30.24	19	29.74	13
Turks Island.....	29.95	-0.03	30.06	24	29.73	19
Key West.....	29.94	.00	30.12	24	29.79	20
New Orleans.....	30.00	+0.02	30.19	24	29.81	14

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Extra-tropical cyclones and gales.—The North Atlantic experienced but one storm of importance that originated outside the Tropics. On the forenoon of the 20th there was a large area of comparatively low pressure covering most of the eastern North Atlantic to northward of 40° N., the area extending also far to the northward to cover most of the Greenland-Baffin Land region. Within the area, the most important low center at that time was near the south coast of Iceland. Rather strong winds covered a considerable area. Other centers developed of which the most important and the farthest to the south was well defined by the evening of the 21st, near 47° N., 23° W. From this position the center moved toward the north-northeast, and for a time gained in force. By the morning of the 23d it had passed well beyond the most-traveled steamship routes and was central about 300 miles west of northern Ireland. Thereafter it lost force, but was still in existence on the morning of the 24th close to southeastern Iceland.

The 22d was the day when vessels in transatlantic service encountered the gales in greatest numbers, chiefly between 43° and 51° N., and 12° and 27° W. As may be noted in the table of "Ocean gales and storms," two east-bound vessels met force 11 winds.

Tropical hurricane.—But one disturbance of tropical origin was noted over Atlantic waters during the month, but it was of great intensity and importance. A detailed description of this storm appears in this issue of the REVIEW. Here it may be remarked that the center appeared to the northeastward of the Leeward Islands late on the 16th, and at first advanced nearly westward till it was not far from the central Bahamas, then turned northward, passed not far from Hatteras on the 21st, and later crossed Long Island and the western part of New England. The track is shown on chart IX, which gives the synoptic situation on the 20th at Greenwich noon.

Vessel reports that have come by mail include 7 instances that appear in the table of "Ocean gales and storms," where winds of full hurricane force were experienced. Of these, 5 occurred in latitudes 25° to 30° N., and the others to northward of 38° N.

Fog.—On the whole, there was considerably less fog than had been noted during the preceding month. Such a decrease is expected during the fall season.

When the amount of foginess is compared with the normal September situation, it appears there was a little more than usual over the northernmost areas from which numerous vessel reports come, also from areas near Newfoundland. On the other hand, there was less than normal fog in mid-ocean to southward of 50° latitude, and from near the southern limits of the Grand Banks westward to the vicinity of New England. The chief period of fog occurrence over the western North Atlantic was from the 12th to 23d, inclusive; but from the 8th to 13th was the main period for the eastern portion.

Two adjacent 5° squares reported the greatest number of days with fog, namely 10. These squares are located in 40° to 50° N., 45° to 50° W.

OCEAN GALES AND STORMS, SEPTEMBER 1938

Vessel	Voyage		Position at time of lowest barometer		Gale began September	Time of lowest barometer September—	Gale ended September	Low-est barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of low-est barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Shenandoah, Am. S. S.	Port Arthur...	Charleston...	24 50 N.	80 20 W.	7	Mdt, 7...	8	<i>Inches</i> 29.96	S.....	S, 5.....	SE.....	SE, 8.....	S-SE.
American Shipper, Am. S. S.	Belfast.....	Boston.....	45 00 N.	56 41 W.	9	8a, 9.....	9	29.57	SSE.....	S, 6.....	NNW.....	WNW, 8.....	SE-S-WSW.
Black Gull, Am. S. S.	New York.....	Rotterdam.....	46 00 N.	40 18 W.	14	2a, 14.....	14	29.70	W.....	W, 6.....	WSW.....	WSW, 8.....	WNW-WSW.
Colytto, Du. S. S.	Grangemouth.....	Montreal.....	56 29 N.	41 07 W.	17	9a, 17.....	18	29.53	W.....	SSE, 6.....	NW.....	NNW, 9.....	WNW-WSW.
Socrates, Du. M. S.	Cristobal.....	Liverpool.....	20 38 N.	59 17 W.	17	10p, 17.....	17	29.29	NNE.....	W, 11.....	WSW.....	W, 11.....	NW-WSW.
Robin Goodfellow, Am. S. S.	Trinidad.....	New York.....	21 15 N.	66 20 W.	18	4p, 18.....	19	29.66	NNW.....	NW, 8.....	SE.....	W, 8.....	NNW-SW.
Pan America, Am. S. S.	do.....	do.....	28 27 N.	69 20 W.	18	10p, 18.....	19	29.69	N.....	NE, 8.....	E.....	NE, 8.....	N-NE.
Gulfhawk, Am. M. S.	Philadelphia.....	Las Piedras.....	25 31 N.	69 54 W.	19	10a, 19.....	20	29.00	NE.....	E, 12.....	SE.....	E, 12.....	NE-SE.
Jean Lafitte, Am. S. S.	Bremen.....	Tampa.....	27 47 N.	72 33 W.	19	4a, 20.....	20	29.31	ENE.....	ESE, 12.....	S.....	SSE, 12.....	E-SE.
Antigua, Am. S. S.	New York.....	Santiago.....	27 06 N.	73 54 W.	19	4a, 20.....	20	28.24	NE.....	NE, 9.....	SSE.....	S, 9.....	NE-S-SE.
Atlantida, Hond. S. S.	do.....	do.....	27 05 N.	74 35 W.	19	7a, 20.....	20	28.14	ENE.....	E, 12.....	SW.....	E, 12.....	NE-SE.
Phobos, Du. M. S.	Falmouth.....	Baytown.....	27 39 N.	73 57 W.	19	10a, 20.....	20	28.81	E.....	S, 12.....	S.....	S, 12.....	SE-SSW.
Agwidale, Am. S. S.	New York.....	Guantanamo.....	29 30 N.	72 35 W.	19	2p, 20.....	21	29.64	E.....	SSE, 9.....	S.....	S, 10.....	ESE-S.
India Arrow, Am. S. S.	Chester.....	Harbor Is., Tex.	30 00 N.	75 40 W.	20	6p, 20.....	21	28.04	E.....	ENE, 12.....	NW.....	ENE, 12.....	E-NW.
Knoxville City, Am. S. S.	New York.....	Cristobal.....	30 30 N.	72 30 W.	19	11p, 20.....	21	29.69	SE.....	S, 11.....	SW.....	S, 11.....	SE-SW.
San Benito, Pan. S. S.	Baltimore.....	Santa Marta.....	36 14 N.	74 36 W.	21	10a, 21.....	21	28.60	E.....	N, 11.....	NW.....	N, 11.....	ENE-N-WNW.
Black Eagle, Am. S. S.	Rotterdam.....	New York.....	50 00 N.	33 00 W.	21	10a, 21.....	22	29.38	NW.....	W, 6.....	NNW.....	NW, 9.....	WSW-NW.
Enterprise, U. S. N.	On southern drill grounds.	Port Arthur.....	38 37 N.	73 54 W.	21	10a, 21.....	21	29.39	N.....	NW, 9.....	W.....	NW, 10.....	N-W.
Gulfprince, Am. S. S.	Portland, Me.	Port Arthur.....	38 37 N.	73 54 W.	21	Noon, 21.....	21	28.82	NE.....	NNE, 9.....	NW.....	NW, 9.....	SE-N-NW.
Platano, Pan. S. S.	Kingston.....	New York.....	38 20 N.	74 56 W.	21	Noon, 21.....	21	28.70	NE.....	NW, 9.....	NW.....	NW, 9.....	ENE-NW-W.
Birmingham City, Am. S. S.	New York.....	Newport News.....	38 55 N.	72 00 W.	21	1p, 21.....	21	28.10	ESE.....	SE, 12.....	WSW.....	SE, 12.....	ESE-SSW.
R. G. Stewart, Am. S. S.	do.....	Baton Rouge.....	39 18 N.	73 48 W.	21	1p, 21.....	21	28.64	NW.....	NW, 12.....	W.....	NW, 12.....	None.
Metapan, Am. S. S.	Boston.....	Puerto Barrios.....	40 36 N.	69 26 W.	21	3p, 21.....	22	29.44	SSE.....	SE, 10.....	WSW.....	SE, 10.....	SE-SW.
Washington, Am. S. S.	New York.....	Cobh.....	40 28 N.	73 50 W.	21	4p, 21.....	21	28.69	NE.....	WNW, 10.....	SW.....	W, 11.....	NE-NW-SW.
Duquesne, Am. S. S.	Manchester.....	Galveston.....	46 24 N.	22 18 W.	21	11p, 21.....	22	29.15	WSW.....	WSW, 8.....	W.....	W, 8.....	

1 Barometer uncorrected.

2 Position approximate.